

CALIFORNIA RIVERS RESTORATION FUND

7981 Crystal Boulevard • El Dorado, CA 95623-4817

Phone/Fax: (530) 620-3631

Email: cmcfish@innercite.com

October 16, 2002

Mr. Paul Marshall
California Department of Water Resources
Bay-Delta Office
1416 Ninth Street
P.O. Box 942836
Sacramento, California 94236-0001

Dear Mr. Marshall:

On behalf of the California Rivers Restoration Fund (CRRF), I would like to submit the following comments on the scope and content of the environmental reports to be prepared for the South Delta Improvements Program (SDIP). Although the need to improve water supplies for Californians is great, the CRRF is concerned that increasing the diversion capacity of the SWP Delta export facilities and dredging portions of the Delta may cause further harm to not only fall-run Chinook salmon (*Oncorhynchus tshawytscha*), but also spring-run Chinook salmon and steelhead (*O. mykiss irideus*) in the San Joaquin River basin. Since spring-run Chinook salmon and steelhead are federally listed species protected under the Endangered Species Act, the scope of the environmental impact analyses for the SDIP should be expanded to include these fish. Furthermore, there is evidence that Delta exports can adversely affect both juvenile and adult salmonids in the Delta. The following provides justification for these additional analyses.

Steelhead And Spring-Run Chinook Salmon Occur In The San Joaquin River Basin

The scope of the Draft EIR/EIS does not include steelhead or spring-run Chinook salmon, whereas there is evidence that they occur in the San Joaquin River basin. Mr. Steve Walser, who is the Executive Director of CRRF and a professional fishing guide, his staff of professional fishing guides, and many other anglers have used hook-and-line to catch numerous steelhead ranging between 1 and 6 kilograms (13.2 pounds) in the Stanislaus, Tuolumne, and Merced rivers. Although the anadromous nature of the large trout has not been confirmed by extensive studies of strontium concentrations in otoliths or ocean growth patterns in scales, there are several characteristics of these fish that make it likely that many are steelhead:

- Scales taken from trout larger than 20 inches in length in the Stanislaus River indicate a period of accelerated growth that is typical of estuary or ocean residence (McEwan 2001).
- Large adult fish weighing up to about 6 kilograms are primarily caught by CRRF members in the Stanislaus, Tuolumne, and Merced rivers between January and June, which is the period when adult steelhead typically migrate into Central Valley tributaries to spawn.

- Some of the large fish caught in all three San Joaquin tributaries have a bright silvery body and red color on their operculum, which is typical of steelhead that have just entered fresh water.
- Some of the large adults caught by Mr. Walser have lice, which may be a species found in the Delta, thereby suggesting that the fish either resided in or migrated through the Delta.
- A few juvenile trout have characteristics typical of steelhead smolts migrating to the ocean: they are approximately 200 mm in length, have a smolt index of 5 based on the IEP Steelhead Project Work Team Steelhead Life-stage Assessment Protocol, and are caught in screw traps in the Stanislaus River at Oakdale and Caswell Park between January and June each year (Demko and others 2000).
- A genetic analysis of steelhead smolts captured in rotary screw traps on the Stanislaus River indicate that they are closely related to the upper Sacramento River steelhead, but not steelhead from the Mokelumne River Hatchery or Nimbus Hatchery on the American River (McEwan 2001) and so they appear to be a population of naturally produced fish.

The Department of Fish and Game (DFG) has additional evidence that juvenile and adult steelhead occur in the lower Tuolumne River. In a December 5, 2001 letter to Mr. Erick Gadecki, Federal Energy Regulatory Commission, Mr. William Loudermilk, DFG Regional Manager, wrote that his staff "do have substantive field data collections to substantiate the presence of both adult and out-migrating juvenile steelhead with[sic] the Tuolumne River downstream of the Project No. 2299 facilities" (FERC RIMS Document ID 2243156). On January 21, 2001 Mr. Kenneth Kundargi, DFG staff biologist sent a memorandum to other DFG staff, NMFS, the U.S. Fish and Wildlife Service, and many other interested parties. In his memo, he states that: "[o]n January 11, 2001 while angling in the lower Tuolumne River, I captured a large rainbow trout, most likely a steelhead judging by its large size. The fish was captured in Riffle 5B. Riffle 5B is the first riffle upstream from Basso Bridge (see attached map). An accurate measurement of 28 inches (fork length) was obtained with a tape measure. The fish was estimated to weigh 10 lbs. The specimen was male as evidenced by the hooked kype. The fish displayed spawning coloration in the form of a prominent red stripe along the lateral line, and prominent red opercula. The fish had an intact adipose fin, indicating it was of natural origin. On January 15, 2001, I captured an 11-inch juvenile steelhead smolt while angling in Riffle A2. Riffle A2 is the second riffle below La Grange Dam. The fish was silvery with parr marks absent and an absence [of] spotting on the fins. The scales were very deciduous. This fish appeared to be Life Stage 5 (smolt) as specified in the IEP Steelhead Project Work Team Steelhead Life-stage Assessment Protocol. No tissue or scale samples were collected." The capture of a steelhead smolt is strong evidence of a reproducing population of steelhead in the lower Tuolumne River.

Every year, CRRF members observe adult Chinook salmon in all three San Joaquin tributaries between April and August, which strongly indicates that they are spring-run. The Department of Fish and Game, Tuolumne River Restoration Center in La Grange, used gill nets to collect some of these fish in summer 2000.

Delta Flows Are Probably Important To The Survival Of Juvenile San Joaquin basin Chinook Salmon and Steelhead

Although a permanent operable fish control structure at the head of the Old River may reduce the mortality of juvenile fall-run Chinook salmon due to direct and indirect effects of Delta pumping at the SWP facilities, many juvenile spring-run Chinook and steelhead that migrate prior to April 15 will not be protected unless the barrier is closed. Furthermore, dredging portions of the Old River, Middle River, and West Canal may increase predator populations and degrade water quality in these channels and thereby potentially increase the mortality of juvenile salmonids.

High winter flows trigger large numbers of juvenile salmon, primarily fry (< 40 mm fork length) and steelhead smolts to migrate from the rivers into the San Joaquin River and Delta where survival rates are low compared to survival in the tributaries. Studies by Erkkila and others (1950) indicate that many more Chinook salmon fry (about 40 mm long) were collected by trawling in the San Joaquin Delta in March 1949, a relatively dry year, compared to the number of parr and smolts collected from April through June of the same year. Recent screw trapping studies indicate that 87% of the chinook salmon outmigrants captured at Caswell State Park emigrated as fry during 1999 (Demko and others 2000). Chinook salmon fry and steelhead smolts migrations from the Stanislaus River coincided with the onset of peak flows based on screw trapping studies (Demko and others 1999, 2000, S.P. Cramer & Associates, Inc. 1997).

Survival of juvenile fall-run Chinook salmon in the Delta is highly dependent on springtime flows. Ocean recovery rates of fry obtained from the Coleman National Fish Hatchery and tagged with coded wire half tags indicate that fry survival was low in the Central Delta near the mouth of the Mokelumne River than in the North Delta near Courtland, Ryde, or Isleton during dry years, although the difference was not statistically significant (Brandes and McLain 2001). However during flooding in 1982 and 1983, tagged fry survived at similar rates in the Central Delta and South Delta in the Old River compared to the North Delta.

Juvenile steelhead smolt survival in the San Joaquin basin may be highly dependent on springtime Delta flows as well. Although smolt survival studies have not been conducted for steelhead in the San Joaquin basin, the number of adult steelhead caught by anglers follows the same pattern observed with fall-run escapement in the San Joaquin basin: namely that catch/escapement substantially increases two years following flood flows. Mr. Steve Walser reports that his catch of adult steelhead, 12 to 15 inches in length and weighing about 0.25 kilograms, with hook-and-line greatly increased in all three San Joaquin River tributaries in 1997. Then in 1999, his catch of large 1- to 6-kilogram steelhead greatly increased in all three tributaries. High catch rates of large fish have continued through 2001 in all three tributaries.

The increase in Mr. Walser's catch rate of adult steelhead can best be explained if smolt survival was relatively high during the flood flows that occurred in 1995, 1997, and 1998. Since 1992, a minimum flow of 200 cfs has been maintained in the Stanislaus River that should have provided suitable spawning and rearing habitat for steelhead, however most trout caught were between 10 and 12 inches in length with a few weighing up to 6 kilograms through 1996. In 1995, there were unusually high flows in the San Joaquin Delta, 20,000 to 25,000 cfs at Vernalis between

March and June, and a high rate of smolt survival in spring 1995 would account for the increased catch rate of adults in 1997. Likewise the unusually high springtime flow that occurred in the San Joaquin Delta in 1997 (Vernalis flows exceeded 25,000 cfs between January and March) and 1998 (Vernalis flows ranged between about 15,000 and 35,000 cfs between mid February and June) would account for the relatively large adults caught from 1999 through 2001. If the high flows were simply attracting adult steelhead from the Sacramento River basin, catch rates of the large steelhead should have been higher in 1995, 1997 and 1998 than in 1999 and 2000, when Vernalis flows ranged between 10,000 and 17,000 cfs for about a month in February and March. Since the reverse was true, the high flows must have been affecting smolt survival and not adult attraction.

Although the impacts of Delta exports on Chinook salmon fry rearing in the Delta and steelhead smolts migrating through the Delta have not been studied, it is likely that diverting water through the Old River and West Canal to the CVP and SWP pumping facilities will increase mortality of these listed species through direct entrainment and by reducing flow in the mainstem San Joaquin River near Stockton. USFWS smolt survival studies indicate that the survival of hatchery-reared juvenile salmon is directly related to flow in this reach. The environmental analysis for the SDIP should evaluate these potential effects on juvenile salmonid survival.

A cumulative effect that should be considered in this analysis is that the Port of Stockton is planning to deepen the deep-water ship channel between the port and Pittsburg (The Sacramento Bee, July 18, 2002). The Port of Stockton has contracted with the U.S. Army Corps of Engineers to conduct a feasibility study. Dredging the Old, Middle, and mainstem San Joaquin rivers may degrade water quality and increase the density of predators, and thereby increase the mortality of juvenile salmonids. Closing the barrier at the head of the Old River when juvenile salmonids are migrating may help reduce these impacts by maintaining high flows in the mainstem.

Delta Exports May Cause Adult San Joaquin River Basin Chinook Salmon and Steelhead To Stray To The Sacramento River Basin

Whenever the percentage of San Joaquin flow at Vernalis that was exported in mid-October exceeded about 400% (i.e., four times the San Joaquin flow at Vernalis) from 1979 to 1996, between 11 and 17% of hatchery-reared San Joaquin basin Chinook salmon with coded wire tags strayed to the Sacramento River basin (Mesick 2001). However, when 10-day pulse flows in mid-October were released from the San Joaquin River tributaries and the percentage of flow exported remained below 300%, straying rates were less than 3%. It is reasonable to assume, that exports that exceed 300% of San Joaquin River flows would also cause steelhead and spring-run salmon to stray as well. Straying of adult San Joaquin basin steelhead and spring-run to the Sacramento basin jeopardizes the San Joaquin basin populations by reducing the number of San Joaquin basin juveniles produced. The environmental analyses for the SDIP should evaluate the effects of Delta export rates and flows between mid-February and July on straying of adult spring-run salmon and between November and June on straying of adult steelhead.

Mitigation For Project Impacts On San Joaquin River Basin Salmonids

I would like to suggest that the potential impacts of the SDIP on juvenile salmonids in the Delta

can be mitigated by closing the permanent operable fish control structure at the head of the Old River between 1 December and 15 June when juvenile chinook salmon and steelhead occur in the Delta. The barrier should be operated such that a majority of the flow remains in the mainstem San Joaquin River whereas some water can "leak" through the barrier to maintain suitable water quality for irrigation purposes in the Old and Middle rivers.

To minimize straying of adult San Joaquin River salmonids, the combined exports at the CVP and SWP facilities should not exceed 300% of Vernalis flows for a portion of each month between November and July to provide homing cues for spring-run Chinook salmon and steelhead and in mid-October to provide homing cues for fall-run Chinook salmon. I suggest that combined exports should not exceed 300% of Vernalis flows (1) during storm events that naturally increase flows between November and mid-April; (2) during outmigration pulse flows from the San Joaquin River tributaries between mid-April and mid-May; (3) during 10-day periods in mid-June and mid-July, and (4) during a 10-day period in mid-October.

On behalf of the CRRF, I appreciate the opportunity to provide these comments. Please do not hesitate to contact me if you have any questions. Thank you.

Sincerely,



Carl Mesick, Ph.D.
Senior Fishery Biologist

cc: Steve Walser

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